1996

AFMC SAO/XPS

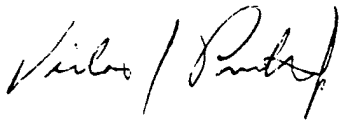
Studies & Analyses Office

Directorate of Plans
HQ Air Force Materiel Command
Wright-Patterson AFB OH 45433

FOREWORD

The AFMC Studies and Analyses Office (AFMC SAO/XPS), a field operating agency under HQ AFMC/XP, conducts and sponsors studies and research of significant materiel issues. Our focus is on the development, modification, and application of mathematical models which can help relate resource alternatives to the peacetime readiness and wartime sustainability of AFMC's customers--the operating commands.

This is our thirteenth Annual Report. It includes descriptions of the projects we worked on in 1996 and our plan for 1997. If you have any comments, or suggestions for further research, contact us at (937) 257-3201 or DSN 787-3201. Our FAX is (937)-656-1498 or DSN 986-1498.



VICTOR J. PRESUTTI, JR.
Chief, Studies and Analyses Office
Directorate of Plans

MICHAEL C. KOSTELNIK
Major General, USAF
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Visit the SAO XPS Web Site at:
http://www.wpafb.af.mil/organizations/HQ-AFMC/XP/sao

EXECUTIVE SUMMARY

The AFMC Studies and Analyses Office (AFMC SAO/XPS) conducts and sponsors studies and research of significant materiel issues. We use, modify, and develop new or improved methods, models, and tools to manage materiel resources.

Our goal is to quantify the relationships between alternative materiel resources and the resultant aircraft availability and sustainability so that AFMC can prioritize and justify its investments in those resources. We work toward this goal by performing studies for our customers and by pursuing a few internally developed projects which have significant potential for providing valuable insights into these relationships.

In 1996 we focused on several major areas. We continued to enhance the process of allocating limited FY96 spares procurement funds and made a major modification to the process for FY97 (*RSD Banding for Effectiveness*). This process was extended to repair funding due to a shortfall in FY97 funding. The process we developed to forecast depot maintenance business area organic workload (*DMBA Workload*) was institutionalized this year. We used the results from our banding work to provide a major portion of the cost component for unit cost targets (*UCT*) and are analyzing this new initiative to determine how we can provide support for our customers' requirement to manage to UCT. We completed the development of the production Readiness Based Leveling (RBL) model to set worldwide stockage levels (*Retail and Wholesale Stockage Levels*). We also computed stockage levels for all items in the Pacer Lean demonstration shops as an interim solution until the formal RBL system is implemented. We provided extensive support to the new system for prioritizing depot repair and distribution actions (*DRIVE/EXPRESS Implementation Support*). This included work that resolved a major debate on how best to consider customer demands (*Requitioning Objective (RO) HOLES vs. Depot Backorders*) and how to make the contract repair process as responsive as the organic process (*CREP Cost-Benefit Analysis and Concept of Operations*). This included a decision tool we developed for material managers to determine when it makes sense to pay more to achieve faster turnaround times. We made a significant advance toward better relating DRIVE/EXPRESS results to customer oriented measures of effectiveness such as aircraft availability (*Integrating an Assessment Capability into DRIVE*). We responded to several high visibility needs for responsive weapon system capability assessments during the year (*AFMC Capability to Support Airlifters in War*, *Support to National Logistics Study*, and *Logistics Enhanced Awareness Development (LEAD) Wargame Analysis*). We assisted the LANTIRN System Program Office (*LANTIRN Supportability Assessment*) and countered suggestions that additional spares procurement was necessary. We assisted a team looking at forecasting requirements for weapon system managers (*Weapon System Reporting*) and assisted in reducing the lengthy materiel management requirements process (*Budget Requirements Review*). Our initial requirements PC model application was accepted by the Supply Support IPT for their new system design and exported to Foreign Military Sales customers (*Readiness Based Sparing for Initial Support and FMS*).

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THE STUDIES AND ANALYSES OFFICE

The function of the AFMC Studies and Analyses Office (AFMC SAO/XPS) is to provide a source of operations research skills for the Headquarters. We are a Field Operating Agency (FOA) under HQ AFMC/XP. Prior to August 1995 we were known as the Management Sciences Division (HQ AFMC/XPS). Although we are a part of the Directorate of Plans, we often perform our studies and analyses for clients outside the Directorate.

The majority of our analysts have advanced degrees in technical areas such as operations research, mathematics, engineering, and management sciences. Each new analyst is expected to have, or obtain within a three to four year training period, an appropriate advanced degree.

Our emphasis has been on the application of mathematical modeling techniques to improve the management of materiel resources. We have focused our efforts on the development and enhancement of mathematical models which can relate materiel resource decisions to resultant impacts on aircraft availability so that AFMC can prioritize and justify its investments in those resources. We work toward accomplishing this by performing studies for our customers and by pursuing a few internally developed projects which have significant potential for providing valuable insights into these relationships. The office works closely and shares results with other governmental and private analyses organizations.

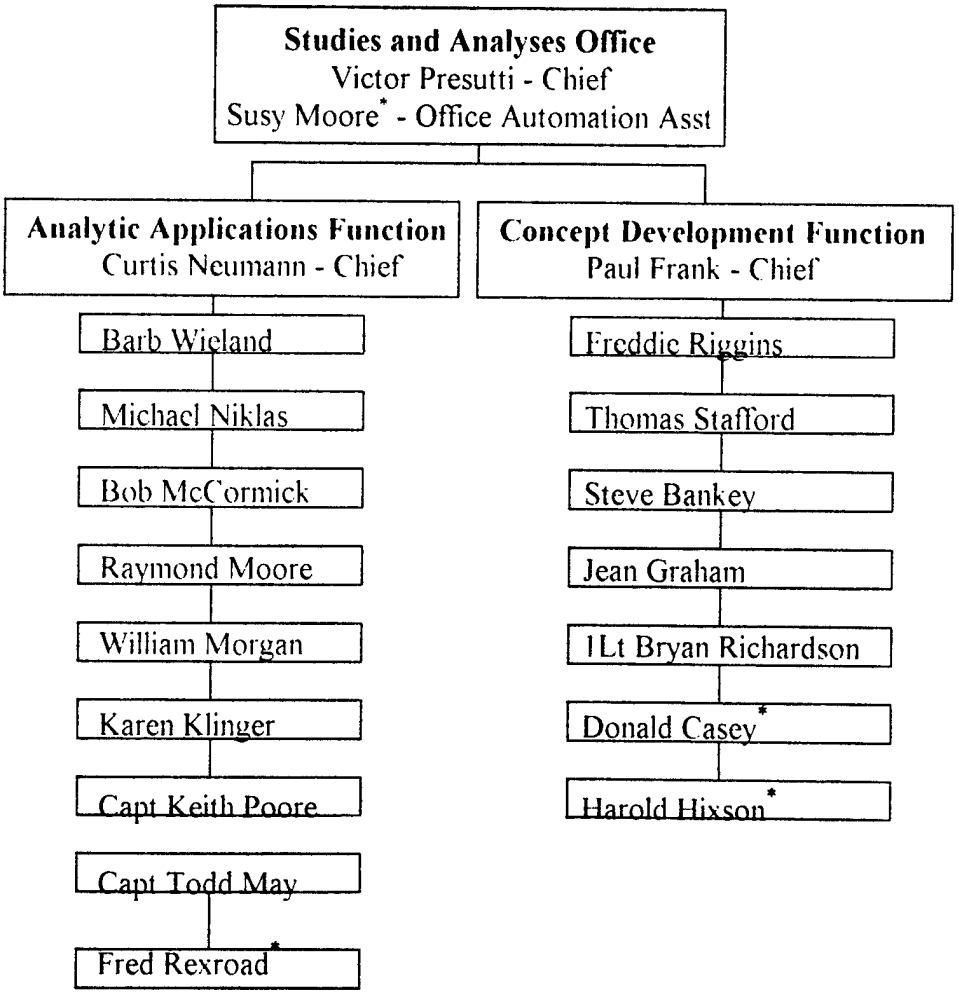
We actively assist the AFMC staff and other Air Force agencies in incorporating improved methodologies in their management of materiel resources. We are organized into two Functions. The Analytic Applications Function focuses on issues involving the requirements computation of peacetime and wartime recoverable item spares, the prioritization of repair and distribution actions needed to execute materiel support, and the assessment of weapon system capability due to the support actions taken. The Function's authorized staffing consists of eight operations research analysts and a logistics staff officer. The Concept Development Function focuses on new initiatives such as developing support for the implementation of unit cost targets, a prototype peacetime assessment capability for non-aircraft Command Control Communication Computer Intelligence (C4I) reparable items, and identifying workload drivers for depot maintenance operations in the Air Logistics Centers. The Function's authorized staffing consists of eight operations research analysts. There is close cooperation and interaction between the analysts of the two functions on most studies.

This office has the Air Force technical responsibility for three recoverable item spares requirements models. The Aircraft Availability Model (AAM) is embedded in the Recoverable Item Requirements System (D041). It incorporates aircraft availability objectives into the computation process for peacetime operating stock. The

Aircraft Sustainability Model (ASM) is the computational technique employed by the Weapon System Management Information System (WSMIS) to identify wartime spares requirements. It is also used for determining initial spares requirements. The Dyna-METRIC model is the wartime capability assessment tool used by WSMIS.

We also have the technical responsibility for the Distribution and Repair In Variable Environments (DRIVE) model. This model is used to prioritize the repair and distribution of recoverable items based upon the marginal gain in operational capability

The organization and current personnel of the Studies and Analyses Office are as follows:



*These individuals left SAO/XPS at the end of 1996 due to retirement, separation, or transfer.

The next two sections of this report contain specifics of our 1996 accomplishments and our planned program for 1997.

ACCOMPLISHMENTS IN 1996

In 1996 we focused on several major areas. We continued to enhance the process of allocating limited FY96 spares procurement funds and made a major modification to the process for FY97 (*RSD Banding for Effectiveness*). This process was extended to repair funding due to a shortfall in FY97 funding. The process we developed to forecast depot maintenance business area organic workload (*DMBA Workload*) was institutionalized this year. We used the results from our banding work to provide a major portion of the cost component for unit cost targets (*UCT*) and are analyzing this new initiative to determine how we can provide support for our customers' requirement to manage to UCT. We helped simplify the budget requirements review (*BRR*) by means of a statistical sampling process that significantly reduced the time required without sacrificing accuracy. This process was used in FY96 and is planned for use in FY97. We created a predictive peacetime assessment model to assist Command, Control, Communication, Computers, and Intelligence (*C4I*) System Program Directors in evaluating and managing their weapon systems. This process is being assessed to determine if the cost and effort required to implement additional systems is justified. We completed the development of the production Readiness Based Leveling (RBL) model to set worldwide stockage levels (*Retail and Wholesale Stockage Levels*). We also computed stockage levels for all items in the Pacer Lean demonstration shops as an interim solution until the formal RBL system is implemented. We provided extensive support to the new system for prioritizing depot repair and distribution actions (*DRIVE/EXPRESS Implementation Support*). This included work that resolved a major debate on how best to consider customer demands (*RO HOLES vs. Depot Backorders*) and how to make the contract repair process as responsive as the organic process (*CREP Cost-Benefit Analysis and Concept of Operations*). This included a decision tool we developed for material managers to determine when it makes sense to pay more to achieve faster turnaround times. We made a significant advance toward better relating DRIVE/EXPRESS results to customer oriented measures of effectiveness such as aircraft availability (*Integrating an Assessment Capability into DRIVE*). We responded to several high visibility needs for responsive weapon system capability assessments during the year (*AFMC Capability to Support Airlifters in War*, *Support to National Logistics Study*, and *Logistics Enhanced Awareness Development (LEAD) Wargame Analysis*). We assisted the LANTIRN System Program Office (*LANTIRN Supportability Assessment*) and countered suggestions that additional spares procurement was necessary. We assisted a team looking at forecasting requirements for weapon system managers (*Weapon System Reporting*). Our initial requirements PC model application was accepted by the Supply Support IPT for their new system design and exported to Foreign Military Sales customers (*Readiness Based Sparing for Initial Support and FMS*).

In addition to these major areas, the following descriptions of our 1996 accomplishments include numerous other analysis issues we worked.

TITLE: *AFMC Capability to Support Airlifters in War*

CUSTOMER: HQ AFMC/DRB

OBJECTIVE: Determine AFMC's capability to support AMC aircraft (C-5, C-141, C-17, KC-135) through a 2MRC scenario. Specifically, can AFMC depots keep up with the wartime repair workload so that airlifters will have the parts they need to accomplish planned missions for six months of war?

RESULTS: We obtained data from WSMIS and used the Dyna-METRIC model to calculate monthly depot repair requirements for each recoverable component of these aircraft. This initial analysis of the data resulted in a relatively short list of potentially critical items. Each depot was then asked to evaluate its ability to support the monthly demands for these items. Based on this study, HQ AFMC told HQ AMC "we are glad to report to you that the outcome of this assessment is that we are confident of AFMC's ability to support AMC throughout the 2MRC scenario."

ANALYST: Michael Niklas
(937) 257-6920; DSN 787-6920

TITLE: *Support to National Logistics Study*

CUSTOMER: HQ AF/LGSP

OBJECTIVE: The Chairman of the Joint Chiefs of Staff requested a National Logistics Study to assess the nation's capability to support the 2MRC scenario. The Air Staff came to us with a very short suspense and requested our assistance with the Air Force portion of the study. They needed help to determine which weapon systems are likely to have supportability problems in war.

RESULTS: Because of having worked on similar efforts in the past, we were able to quickly provide capability assessment summaries for all war-tasked aircraft. Most of the information we delivered came from WSMIS SAM. We applied automated sanity checks to the WSMIS reports. We researched their critical items of weapon systems which appear to have supportability problems. A follow-on effort is underway to extend the analysis and consider depot repair constraints.

ANALYST: Michael Niklas
(937) 257-6920; DSN 787-6920

TITLE: *RSD Banding for Effectiveness*

CUSTOMERS: HQ AFMC/LG/FM/DR

OBJECTIVE: Assist AFMC in allocating its updated 1996 and new 1997 Obligation Authority (OA) for recoverable item spares replenishment buys and repair by ALC and weapon system. In addition, provide guidance by item, as needed, to the Reparable Stock Division (RSD) item managers.

RESULTS: In early 1996 we periodically updated the distribution of FY96 OA dollars when the Air Staff issued new Annual Operation Budgets (AOBs). Through the course of the year we continued to answer questions concerning the banding process. There was much debate about non-demand based requirements and their impact on aircraft availability. Roughly 60% of the total gross requirement is non-demand based, and we removed these non-demand requirements from consideration in our weapon system availability approach to banding. Also, a new policy in FY96 allowed the ALCs complete control of their allocated funds. They could "flex" their money between weapon systems and among RSD buy, RSD repair and System Support Division (SSD) requirements. With the magnitude of non-demand based requirements and the ability to flex, we decided our previous method of allocating the OA to achieve weapon system availability targets no longer applied. For FY97 we created a new methodology to account for non-demand based requirements and recognize the flex that the ALCs could exercise. It is based on the exponential banding procedure we developed in 1993, with changes to accommodate assets on-hand. This process incorporates prioritized "bands" of weapon systems. For FY97, we allocated limited RSD funding by delivering ALC and weapon system breakouts using this exponential banding process. We provided the weapon system breakouts to the Air Staff who used them as input to the FAMMAS model to estimate the impact on weapon system availability. These allocations were used in the creation of FY97 unit costs targets (UCTs). (See *Support Managing to Unit Cost Targets.*)

For the first time in recent years, repair was not fully funded in FY97. We also allocated RSD repair OA using the exponential banding process we developed for RSD buy. The methodology for repair is the same exponential banding process used for SSD which we developed four years ago. We delivered ALC and weapon system breakouts of RSD repair dollars as inputs to the creation of FY97 UCTs.

ANALYSTS: William Morgan, 1Lt Bryan Richardson, Fred Rexroad
(937) 257-6920; DSN 787-6920

TITLE: *Support Managing to Unit Cost Targets (UCTs)*

CUSTOMERS: HQ AFMC/LG/FM/DR, ALCs

OBJECTIVE: Provide support for our customers' requirement to manage to unit cost targets (UCTs).

RESULTS: Implementation of UCTs is a new issue for FY97. In light of the uncertainty throughout the command about the implementation, manageability and effects of UCTs, SAO/XPS aggressively pursued projects to help bring clarity and understanding in applying and tracking UCTs, both at the headquarters level and in the field. We expect these and related issues may result in more than one project, including the continued support of buy and repair banding as inputs to the UCT (see *RSI Banding for Effectiveness*). We completed an excursion requested by LG to analyze the outcome of a different buy/repair mix (funding repair at 90% instead of the original 83%). We also began development of a database consisting of final, CSIS and ABCS requirements for FY95 and FY96 as background research. We have also acquired the Funding/Availability Multi-Method Allocator for Spares (FAMMAS) model to conduct in-house assessments on the effects of different funding allocations on MC rates. We will continue to evaluate these issues to determine what further action(s) are needed.

ANALYSTS: 1Lt Bryan Richardson, William Morgan, Thomas Stafford, Keith Poore
(937) 257-6920; DSN 787-6920

TITLE: *Budget Requirements Review (BRR) for Buy and Repair*

CUSTOMER: HQ AFMC/LGI

OBJECTIVE: Determine the accuracy of the budget forecasts produced by the D041 System. LGI requested our help to develop a simplified method to review the buy and repair budget forecasts for each ALC.

RESULTS: We stratified the buy requirements and repair requirements for each ALC based on extended dollar value. Since the majority of the total dollar requirement was included in the top 250 NSNs in each category, that was established as the "universe" from which the sample was selected. We then selected twenty-five buy items and twenty-five repair items at random from each ALC. We reviewed and verified the factors for those items, recalculated their budget requirement, and compared their total requirement after the "scrub" with their total requirement prior to the "scrub". The delta was used as the error factor to be applied against the entire budget.

ANALYST: Don Casey
(937) 257-7408; DSN 787-7408

TITLE: *DRIVE EXPRESS Implementation Support*

CUSTOMERS: HQ AFMC/LGI, ALCs, MAJCOMs

OBJECTIVE: Continue to support the implementation of the AFMC Distribution and Repair in Variable Environments (DRIVE) production system. This project has really translated into supporting the implementation of the Execution and Prioritization of Repair Support System (EXPRESS), a system that was fielded at all ALCs this year to support the repair and distribution of items associated with the various repair shops designated as PACER LEAN shops. The goal of the total DRIVE/EXPRESS system is to closely link recoverable item depot repair and distribution actions to operational customers' needs.

RESULTS: EXPRESS includes the original DRIVE prioritization capability, the DRIVE Distribution Module (DDM), some of the OC-ALC developed Automated Induction System (AIS) logic, and a supportability constraint identification module. Any work done to improve the DRIVE production system data collection or database directly affects the EXPRESS system because the EXPRESS databases are derived from the production DRIVE database. We are the Air Force technical OPR for the DRIVE model which is embedded in both the mainframe DRIVE system and EXPRESS. We are also technical consultants to both the Repair Determination Branch (LGIR), the functionals for both DRIVE and EXPRESS, and the DRIVE/EXPRESS Program Management Office.

We implemented a model change to include non-aircraft items in DRIVE/EXPRESS which means all Air Force managed recoverables are now in the database. We provided extensive systems analysis support to guide the software developers in a number of areas. Included here was how to handle Air Force locations that are unknown to EXPRESS yet have backorders for parts, improvement of the process that provides to all of the ALC EXPRESS sites the daily asset and backorder files, how to take into account the substitute (one-way) relationships between parts when determining repair requirements, and how to include at least three more levels of indenture for items below the SRU level. We completed a study that resolved a vigorous debate on what better represents the true customer need at our Air Force bases (see *Requisitioning Objective (RO) Holes vs. Depot Backorders*). We also were major players in discussions that led to decisions on topics, such as, what the logic should be for stocking parts in the newly created depot Shop Support Centers, how to associate correct depot maintenance control numbers with the carcasses being ordered automatically from EXPRESS, and how to determine the best workload for contract repair sources (see *Contract Repair Enhancement Program (CREP)*). We fielded a number of questions from the ALCs over the year and accompanied LGIR personnel on some of the ALC EXPRESS site visits where we fielded questions and investigated anomalies. We were a member of the Dirty Data IPT led by the Standard Systems Group (SSG) to improve the data being fed to DRIVE/EXPRESS and other depot data systems from the Air Force base supply system.

ANALYSTS: Bob McCormick, Barb Wieland
(937) 257-6920; DSN 787-6920

TITLE: *Production Lead-time Reduction*

CUSTOMER: HQ AFMC/AQ

OBJECTIVE: Evaluate the reduction of production lead-times of 1,120 recoverable spare parts and provide HQ AFMC/AQ an analysis database allowing them to evaluate additional options.

RESULTS: HQ AFMC/AQ requested we determine requirements based on various reductions in the production lead-times (PLTs) of 1,120 recoverable NSNs they provided. Using the Aircraft Availability Model and D041 pipeline information, we computed buy requirements resulting from 10%, 25%, 50% and 100% shorter PLTs for those 1,120 NSNs. We provided a database that lists the NSNs along with their lead-times, buy quantities at various reduced PLTs and other item specific information. HQ AFMC/AQ plans to use the information we provided to support initiatives that slash PLTs for recoverable spares that AFMC procures for weapon system support.

ANALYSTS: William Morgan, 1Lt Bryan Richardson
(937) 257-6920; DSN 787-6920

TITLE: *Peacetime Assessment Model for Non-Aircraft C4I Items*

CUSTOMERS: HQ AFMC/DRD, SM-ALC/LHY

OBJECTIVE: To create a peacetime assessment model for non-aircraft Command, Control, Communication, Computer, and Intelligence (C4I) reparable items based on item specific requirements and funding that program managers can cost-effectively use to assess the health of their weapon systems.

RESULTS: HQ AFMC/DR developed list of non-aircraft C4I weapon systems and supplied it to us. We agreed to work with the Ground Theater Air Control (GTAC) System Program Office to develop a model to assess peacetime requirements for reparable spares. After we were given a list of GTAC end items, we developed a process of gathering the data necessary for the assessment algorithm. A major accomplishment was producing code to build levels of indenture for the GTAC end items. Our program will build levels of indenture given any appropriate set of Application, Program, and Indenture (API) data. We modified an existing system-availability assessment algorithm to handle our data. The customer will decide, based upon a report to be written by us, if the benefits support the resources required to implement for C4I systems. We anticipate completing this project in April 1997.

ANALYSTS: Jean Graham, Fred Rexroad, William Morgan, James S. Bankey
(937) 257-6920; DSN 787-6920

TITLE: *Retail and Wholesale Stockage Levels for the Air Force*

CUSTOMERS: HQ AFMC/LGI/LGL

OBJECTIVE: Continue to provide technical support during the testing and implementation of Readiness Based Leveling (RBL). RBL integrates retail (base) and wholesale (depot) environments while it determines the best base stockage levels and depot working levels to achieve the lowest, worldwide, expected base backorders. RBL postures the Air Force for achieving the highest aircraft availability based upon the computed worldwide asset requirement.

RESULTS: We had two key accomplishments.

(1) We ran the RBL model in-house during 1996 in support of the Pacer Lean shops (special sites chosen for testing Lean Logistics initiatives). Our work included preprocessing the data, running the RBL model, analyzing data for anomalies, and reformatting output for easy use in the field. Throughout this process, we discovered and rectified numerous data problems adversely impacting RBL's performance. We also made several model improvements and developed model logic to meet the needs of the communications-electronics community and to properly recognize the forward depot operation known as the Support Center Pacific (SCP).

(2) We modified the in-house RBL model into a production version for incorporation into the Readiness Based Leveling System (D035E). We worked with the RBL review team -- HQ AFMC/LG, MSG, SSG, AFLMA, MAJCOMs and ALCs -- in an initial D035E system field test involving four test sites. We provided analysis support and helped to identify several data and one model 'bug'. We corrected the model bug and helped identify solutions for many of the data issues. We will also be part of a subsequent test at the same sites scheduled for early 1997 with the purpose of providing input to a February Air Force Supply Executive Board (AFSEB) "go - no go" decision.

ANALYSTS: Bob McCormick, Capt Todd May
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TITLE: *LANTIRN Supportability Assessment*

CUSTOMER: ASC/VLL

OBJECTIVE: Provide data and analysis to the customer (LANTIRN Logistics Office -- LANTIRN SPO) for a supportability assessment. They needed to determine if system-wide reprocurement would be beneficial to Low Altitude Navigation Targeting InfraRed for Night (LANTIRN). They specifically asked us to look at the range and depth of spares and failure rates on problem parts.

RESULTS: Using D041 we identified all LANTIRN targeting and navigational pod stock numbers, including support equipment. The System Program Office (SPO) gave us listings of their Top Twenty problem parts. We used D041 and other sources of data to determine asset conditions and positions, pipeline segments and requirements, basic item information, and stock levels and buy requirements for all items in our analysis with particular attention paid to the problem parts. Our analysis of D041 showed nearly all of the LANTIRN items to be in good health. We pointed out some areas of concern, namely contractor reporting of assets, accuracy of Mission Capability (MICAP) reporting, and the impact of wartime requirements. Although problems do exist in the areas of repair, lack of spares, and support equipment, we were able to show that further system-wide reprocurement would not provide any long-term help. We documented our analysis in April 1996 with a report and talked with the SPO to clarify some of our findings.

ANALYSTS: William Morgan, Jean Graham
(937) 257-6920; DSN 787-6920

TITLE: *Product Quality Deficiency Reports*

CUSTOMER: HQ AFMC/ENR

OBJECTIVE: When defective material is received, a Deficiency Report (DR) is prepared by the customer. HO AFMC/EN requested our assistance in developing a metric to compare the DRs at each of the AFMC Centers.

RESULTS: We developed a metric based on the dollar value of the contract, stage in the life cycle, duration of the DR from origination until resolution and the severity of the problem represented by the DR. Some of the data needed in the proposed metric was not available in the current databases. HQ AFMC/EN is taking action to modify the respective databases and additional SAO/XPS support will then be required to conduct sensitivity analysis on the various factors that make up the metric.

ANALYST: Don Casey
(937) 257-7408; DSN 787-7408

TITLE: *Requisitioning Objective (RO) Holes vs. Depot Backorders*

CUSTOMERS: HQ AFMC/LGI, Requirements Re-engineering Team

OBJECTIVE: Determine what better represents the true customer need at our Air Force bases -- RO holes at the bases or base backorders at our depots.

RESULTS: There had been an ongoing debate among various groups in AFMC as to whether depot backorders or base RO holes better represented the true base need. The issue of which method to use is important when determining the depot repair requirement for an item (i.e., capping the repair list in EXPRESS). A depot backorder is an unfilled base requisition. A RO hole is the difference between what a base is allowed to have on its shelf and what it actually has on hand. At the 29 Feb 96 EXPRESS meeting held at OO-ALC, SAO/XPS was asked by HQ AFMC/LGI and the Requirements Re-engineering Team to determine the extent of the differences between RO holes and backorders as a first step towards resolving the issue. We acquired a snapshot of the backorder (D035A) and base asset (D035C) files from all five ALCs on 23 Apr 96. We rolled up all of the individual stock number data to unique base - I&S (Interchangeability and Substitutability) master NSN combinations before doing the comparisons of RO holes to backorders. Of the 350,000+ cases across all five ALCs, the number of backorders exactly matched the RO holes in 85-95% of the cases. In 93-99% of the cases, the number of backorders either exactly matched the RO holes or was off by only one. Based on this analysis and other studies on asset and requisition data, we recommended that RO holes be used to cap the EXPRESS repair requirement rather than backorders. This is because we believe the data used to compute RO holes is more likely to be valid than backorder data. For example, we know depot backorders don't always get canceled when the base demand is satisfied.

ANALYSTS: Barb Wieland, Curtis Neumann
(937) 257-6920; DSN 787-6920

TITLE: *DRIVE Engine Investigation*

CUSTOMER: AFMC SAO/XPS

OBJECTIVE: Examine the impact of excluding whole engines in the DRIVE database. Determine if the DRIVE model is giving too much importance to engine module shortages because modules are currently modeled directly on the airplane as LRUs when they actually are SRUs to the engine LRU.

RESULTS: We used the Dyna-METRIC model to compute wartime aircraft availability to compare the different options modeled for the T56 engine (on the C-130 aircraft). Dyna-METRIC was loaded with the DRIVE recommended spares levels for engine modules and parts then run two ways: with and without engines in the database as LRUs. There were some minor differences in the resulting availabilities (92% wartime availability with full cannibalization for the no engine option versus 95% for the option that included engines). Difficulties in adding engine data directly to the Desktop DRIVE system did not allow us to explore other engine related issues which led us to use the Dyna-METRIC model as an alternative approach to provide an indication of how important engines are in the database.

DRIVE is expected to be enhanced during the upcoming year to be able to process more than two levels of indenture data. After this occurs a follow-on project could be opened to conduct a prototype test of a DRIVE system for an aircraft and its engines, modules and exchangeable items.

ANALYSTS: Tom Stafford, Harold Hixson
(937) 257-7408, DSN 787-7408

TITLE: *Funding Availability Multi Method Allocation for Spares (FAMMAS)*

CUSTOMER: HQ AFMC/LGI

OBJECTIVE: The FAMMAS model is used by the Air Staff during the budget cycle to measure the impact of various funding decisions on weapon system capability. It provides estimates of aircraft availability based on Reparable Support Division (RSD) and System Support Division (SSD) funding and requirements for procurement and repair of depot-level reparables. Our objective is to learn how the model works and use it during the annual funding exercises in the same manner as the Air Staff and make enhancements to the algorithms as necessary to support our planned work on managing to unit cost targets.

Work on this project will continue into 1997.

ANALYSTS: Tom Stafford, William Morgan, 1Lt Bryan Richardson
(937) 257-4406; DSN 787-4406

TITLE: *CREP Cost-Benefit Analysis and Concept of Operations*

CUSTOMER: HQ AFMC/LGI/PKL

OBJECTIVE: Help AFMC decide whether to pay for improvements in contract repair responsiveness. The Contract Repair Enhancement Program (CREP) is developing processes to improve contract repair responsiveness. Depot personnel have the responsibility of evaluating the cost-benefit ratios associated with asking contractors to shorten their repair cycle times. Assist the CREP IPT in developing the concept of operation for managing repair and distribution of contract repair items.

RESULTS: We provided a set of rules for filtering candidate items and developed a cost-benefit analysis spreadsheet which provides an objective evaluation of proposed CREP improvements. The Excel spreadsheet uses a minimal amount of data from D041 to compute pipeline quantities and supply system performance measures. For a specified support target, the costs associated with several combinations of "buy" and "repair" are compared. The least cost alternative is identified.

We worked closely with the CREP IPT to help develop the methods to manage contract repair workloads. Our efforts resulted in the IPT agreeing to adapt their process to use EXPRESS for prioritizing the repair and distribution of contract repair items. We are working to resolve several issues that are unique to contract workload to employ this approach. Our efforts should pave the way to eliminate huge blocks of idle pipeline times (and the associated costs of increased spares requirements to fill those ineffective pipelines) traditionally seen with contract repair.

ANALYSTS: Michael Niklas, Bob McCormick
(937) 257-6920; DSN 787-6920

TITLE: *Forecasting Depot Maintenance Business Area (DMBA) Workload*

CUSTOMER: HQ AFMC/LGP

OBJECTIVE: Forecast organic depot workload manhour requirements for Depot Maintenance Business Area (DMBA) planning. A method was needed to project depot workload as a factor of weapon system activity (inventory, flying hours, complexity, organic/contractor mix, etc.).

RESULTS: We developed an algorithm using the total aircraft inventory and total flying hours from historical data. The coefficients determined from the historical data were applied against the projected future weapon system program as documented in the President's Budget. Our development action on this project is complete and all findings have been turned over to HQ AFMC/LGP. However, we have been making depot workload forecasts one and two years into the future and will continue to update the forecast on an annual basis.

ANALYSTS: Freddie Riggins, Don Casey, Paul Frank
(937) 257-7408, DSN 787-7408

TITLE: *Statistical Sampling of Library Usage*

CUSTOMER: HQ AFMC/SVPL

OBJECTIVE: To determine, build and field an appropriate sampling method to use for collecting statistics on the number of people using AFMC libraries and the numbers of various types of resources which are checked out. Historically, this data has been collected every day and summarized for inclusion in Command/USAF-directed reports.

RESULTS: Using prior analyses of historical data from libraries at AFMC Air Logistics Centers, we created a sampling -based database system to perform the necessary calculations to produce information required to be included in Command/USAF-directed reports. We believe each library needs only collect data once per week, however, they can collect it as often as they want. We incorporated the lessons of the limited field-evaluation into the system documentation and distributed it to several HQ AFMC/SVPL-chosen AFMC libraries to provide a streamlined method of collecting required usage data and providing results to the Command Librarian.

With the exception of answering occasional questions from the field libraries, this project is closed.

ANALYST: James S. Bankey
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TITLE: *Readiness Based Sparing for Initial Support and FMS*

CUSTOMERS: HQ AFMC/LGII, ASC/AL, AFSAC/GBKC, AFSAC/GBKS, SA-ALC/LFTE

OBJECTIVE: Develop and assist with implementation of a readiness based sparing (RBS) system for new USAF weapon systems, Foreign Military Sales (FMS) support, and other applications.

RESULTS: The Air Force applies readiness based sparing (RBS) when calculating recoverable item spares requirements for peace and war, but in the past, RBS has not been applied to initial support for new systems or FMS. In support of several distinct sponsors, we developed a PC-based spares management system consisting of a Foxpro database linked to the RBS model the Air Force uses to compute war spares.

We have been and will continue assisting our sponsors in implementing this RBS system. The F-22 System Program Office is using the system to compute initial peace and war spares. The requirements re-engineering team known as the Supply Support IPT that is revising the Air Force provisioning process is applying the system in their revised process prototype. A FMS office in San Antonio is working to implement the system within the International Weapon Item Projection System (IWIPS).

We also delivered the RBS system to our foreign military customers, installed it, and conducted training. The Argentine Air Force and the Colombian Air Force are using the system to calculate a more cost-effective spares mix to improve C-130 support and OV-10 support, respectively.

ANALYSTS: Karen Klinger, Michael Niklas
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TITLE: *Joint Logistics Systems Center (JLSC) Requirements Analysis Support*

CUSTOMER: JLSC/MM

OBJECTIVE: To provide modeling support to the JLSC. We provided the official Air Force expertise to the JLSC on math models used to compute spare parts requirements and were a member of the JLSC math models group chartered to devise common requirements models to be used by all the DoD components.

RESULTS: In early 1996 we focused our efforts in the area of initial requirements determination (IRD) and served as the Air Force representative to the IRD/RBS Component Review Team. We reviewed contractor progress on the development of Windows based IRD models and provided the Air Force approach for IRD to the contractor and the JLSC. We completed an analysis on a comparison of the Navy's PC Aviation Readiness Requirements Oriented to Weapon Replaceable Assemblies (PC ARROWs) model and the Air Force's Aircraft Sustainability Model (ASM). We worked with HQ AFMC/LG functional offices to develop a proposal that would have asked the JLSC to include ASM as part of the IRD suite of models. However, due to a changing role for the JLSC and development of a revised Air Force IRD functional process, we agreed jointly with the functionals to incorporate the capability in the internal Air Force process. About midway through the year, we completed our active work with the JLSC because of the change in its focus.

ANALYST: William Morgan
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TITLE: *Mission Availability Forecasting*

CUSTOMER: HQ AFMC/LGI

OBJECTIVE: Develop a capability to forecast mission availability factors beyond the existing one-quarter forecast used during the Joint Product Management/Support and Industrial Operations Mission Element Board.

RESULTS: Our analysis focused on Total Not Mission Capable-Supply (TNMCS) rates since it is the mission availability factor our customer could have the most impact on. System Program Directors (SPDs) make the one-quarter forecasts; therefore, our initial step was to examine the reliability of their previous forecast performance for six weapon systems: B-1, B-52, C-5, C-141, and F-16. We found their forecast performance to be quite good: error as a percentage of Total Aircraft Inventory (TAI) averaged 1.6 %. This information convinced our customer that the existing forecasting process was adequate for his needs, and the project was closed.

ANALYSTS: Capt Todd May, Don Casey
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TITLE: *Weapon System Reporting*

CUSTOMER: HQ AFMC/DR

OBJECTIVE: HQ AFMC/CC briefed CORONA Fall 95 about an excessive weapon system reporting burden on single managers. HQ USAF/CC directed HQ AFMC/CC to "Form cross-MAJCOM IPT to determine who is driving weapon system reporting and if current requirements are still valid." We were asked to be a member of the HQ AFMC/DR Weapon System Reporting (WSR) IPT to take action on an IPT recommendation to "explore forecasting potential" (i.e. help Single Managers, MAJCOMs, and Air Staff apply forecasting).

RESULTS: Our first initiative was to help the IPT determine if there were any new forecasting requirements. We designed an electronic survey and installed it on the Single Managers' Issues home page for more than 160 weapon and non-weapon related organizations involved with the reporting process. Although no new requirements were borne out of the survey, several issues were raised and directed to the appropriate offices for resolution. Our second initiative addressed a concern voiced by the single managers that they had little information on models available that may be useful to their forecasting needs. We developed a product that relates available models to their applications to help single managers and others take better advantage of the forecast/modeling resources currently available USAF/DoD-wide. The product has three parts: a table of models that relate resources to operational effectiveness (includes name, how it may currently be utilized by current USAF systems, OPRs, model description, inputs, outputs), and a bibliography of similarly-related models, and a table of organizations involved in model production and/or research (includes name, organization mission/products, how to contact them). The results of both initiatives will be given to the WSR IPT for its use and dissemination.

ANALYSTS: Capt Todd May, Michael Niklas
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TITLE: *Analysis of Disposed Parts Repurchased within Twelve Months*

CUSTOMER: HQ AFMC/LGI

OBJECTIVE: Assist HQ AFMC/LGI in analyzing why procurement actions were initiated on certain NSNs within a few months after disposals had occurred.

RESULTS: HQ AFMC/LGI provided a list of several NSNs that had disposal actions and then reprocurement actions within a 12 month period. A few of the NSNs are recoverable (D041) items, -- the rest are consumable (D062) items. We focused attention on an item which had a significant buy resulting from changes in projected factors that don't appear to be supported by historical demand and condemnation data. A subsequent termination action has been initiated in time to avoid taking delivery, but we are researching the information systems to determine if a systemic problem contributed to this situation. We anticipate completing this effort by April 1997.

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TITLE: *Logistics Enhanced Awareness Development (LEAD) Wargame Analysis*

CUSTOMER: AFMC XP-AO

OBJECTIVE: On 13 Aug 96, AFMC sponsored a LEAD Wargame for the 8th Air Force Commander. The game's objective was to examine the logistics capabilities and constraints involved with 8th AF responding to a Lesser Regional Conflict (LRC) starting 30 days after the beginning of a Major Regional Conflict (MRC). XP-AO asked us to model the MRC and estimate the spares quantities that would be available to support the 8th AF during a follow-on LRC.

RESULTS: In recent years, we have acquired and developed various software tools for manipulating and summarizing Air Force data. These tools made it easy to provide the estimate of wartime spares quantities that was requested by XP-AO. First, we accumulated current asset positions for all aircraft recoverable items, then decremented those quantities by the spares requirement for the aircraft involved in the MRC. We placed the resulting LRC assets into a spreadsheet to facilitate sorting of problem items and to make it easy to look up specific parts. The customer reported that the information we provided was precisely what they needed to increase logistics realism in 8th AF's Blue Flag Exercise. Our data retrieval and processing steps have been documented within the software.

ANALYSTS: Michael Niklas, William Morgan
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TITLE: *Working Fund Account (WFA)*

CUSTOMER: Requirements Re-engineering Team

OBJECTIVE: Help the Requirements Re-engineering Team determine if their proposed Working Fund Account concept has merit.

RESULTS: The Working Fund Account concept proposed by the Requirements Re-engineering Team would change how the ALCs get Obligation Authority (OA). For example, repair OA was allocated among the ALCs by HQ AFMC based primarily on the repair budgets developed by the ALCs. Under the WFA concept, each ALC would earn OA whenever a requisition is filled for a part that ALC manages. The WFA would be a true revolving fund with no year money. The team believed a WFA concept would support repair on demand, would better allocate the OA between the ALCs, and would dramatically reduce the time spent developing ALC budgets. At the end of 1995, we acquired several months of filled requisition data from all of the ALCs and began an analysis to compare the amount of OA each ALC would have received under a WFA concept to how much they actually received. After completing the analysis in May 1996, we concluded that the ALCs would have credited themselves with significantly more OA using the WFA filled requisition concept than would have been allowed under the current Office of the Secretary of Defense (OSD) guidelines. Those guidelines restrict AFMC OA for the buy and repair of investment items to net sales adjusted by a unit cost target. We also concluded that the OA would have been proportioned somewhat differently among the ALCs under a WFA concept. We do not know if that would have been a better distribution of the OA. We felt it would be reasonable to consider a WFA concept based on net sales once the Unit Cost Analysis and Resource Tracking System (UCARTS) is implemented since it will provide sales information on a regular basis by ALC.

ANALYST: Barb Wieland
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TITLE: *D041 Factors Study*

CUSTOMER: HQ AFMC/LGI

OBJECTIVE: To analyze reparable item demand forecasting factors and methods that have been used in D041. The study is initially focused on the effects of demand forecasts that depend specifically on the D041 Total OIM Demand Rate values. Subsequent work is to look at the effects of NRTS factors and a list of eleven other factors requested by HQ AFMC/LGI.

RESULTS: We created a comparison database from extracts of existing D041 Interface datasets (via D085) that SAO/XPS has been collecting for several years. It contains eight quarters of demand forecasts projected from March 1994 D041 OIM Demand Rate factors and eight quarters of demand history from the March 1996 D041 comp. We completed some initial analyses of the database and provided interim results to the customer.

We expect the Total OIM Demand Rate analysis to be completed by May 1997.

ANALYSTS: Harold Hixson, James S. Bankey
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TITLE: *Forecasting Not Reparable This Station (NRTS) and Demand Rates*

CUSTOMER: OO-ALC

OBJECTIVE: Determine an appropriate forecasting technique(s) for improving demand and NRTS rates by comparing several different approaches and measuring errors. Provide, if appropriate, a tool for analysts at OO-ALC to forecast demands.

RESULTS: We tested several techniques including eight-quarter moving average, linear regression analysis, and double exponential smoothing, and determined that none of the techniques relying solely on flying hours offered much improvement. We are now focusing on sorties as drivers of failures to see if we can improve the forecasting technique used by OO-ALC. We plan to complete this project in June 1997.

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TITLE: *Support for the Development and Implementation of WSMIS*

CUSTOMER: HQ AFMC/LGI, MSG/SXM, MAJCOMs, HQ USAF/ILS

OBJECTIVE: Improve the quality and usefulness of the Weapon System Management Information System (WSMIS) by designing enhancements and solving technical problems. Take an active role in providing technical assistance to the WSMIS functional management office, the WSMIS Program Office, the development contractors and users of the system.

RESULTS: Major changes in airlift modeling took place this year, and we were asked to evaluate the effect on wartime spares requirements and capability assessments. By applying Aircraft Sustainability Model (ASM), Dyna-METRIC, and other analytical software, we were able to identify the causes of various technical and modeling problems.

Besides troubleshooting, we were heavily involved in the WSMIS modernization effort. The foundation of the modernization effort will be a new version of the ASM. We have been testing and designing improvements for the new ASM so that it can replace the other WSMIS models for both requirements computations and capability assessments.

ANALYSTS: Michael Niklas, Karen Klinger
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TITLE: *Integrating an Assessment Capability into DRIVE*

CUSTOMER: HQ AFMC/LGI

OBJECTIVE: Integrate a peacetime/wartime assessment capability into the Distribution and Repair In Variable Environments (DRIVE) model used to determine the priority of depot repair and distribution actions. DRIVE's objective function is to maximize the probability of achieving stated peacetime and wartime availability goals while other models used by the Air Force relate the expected aircraft availability achieved to the dollars expended or to the specific spares available. These other models include the Aircraft Availability Model used for peacetime spares requirements computation and capability assessment, the Aircraft Sustainability Model for wartime spares requirements computation, and the Dyna-METRIC model used for wartime capability assessment in the Weapon System Management Information System (WSMIS) and for peacetime capability assessment in special studies. By integrating an assessment capability into DRIVE, we can estimate the aircraft availability that results from DRIVE's actions. This statement of availability should be more useful to managers than a statement of the probability of achieving availability goals.

RESULTS: We completed the development of a program which uses data from DRIVE and converts it into a format which can be used by Dyna-METRIC to assess capability. The conversion program supports peacetime, wartime, and peace followed by war scenarios using data from DRIVE's Part and Scenario files or directly from the desktop DRIVE database. The program has been used to conduct some assessments and is now available for use by analysts for special studies. We will focus our future efforts on incorporating it into the EXPRESS system to integrate a capability assessment feature with the EXPRESS repair and distribution prioritization process.

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THE PROGRAM FOR 1997

In 1997 we will devote a major portion of our effort towards implementing new methods to improve the management of materiel spares. This will include methods to determine requirements, allocate resources, execute support actions, and assess impact.

Some specific areas on which we will focus:

Support the implementation of the Readiness Based Leveling system and follow up with additional enhancements.

Develop decision tools to help manage to unit cost targets.

Enhance the FAMMAS model to assist with repair versus buy decisions.

Extend the EXPRESS application for repair planning and funding allocation. Develop solutions for multiple sources of repair.

Provide a tool to determine when it is economical to increase contract repair responsiveness.

Complete documentation of the C4I assessment model so its value can be determined for other C4I systems.

Deliver a readiness based sparing model to the Supply Support IPT charged with developing a new initial requirements determination process for new weapon systems.

Incorporate into WSMIS our procedure for assessing peacetime and wartime capability based on prioritized depot repair and distribution.

In addition, we will continue to respond to requests for short term support and consultation on various issues.

ACRONYMS

2LM	Two Level Maintenance
2MRC	Two Major Regional Conflicts
AA	Aircraft Availability
AAM	Aircraft Availability Model
AAPM	Aircraft Availability Procurement Model
ABCS	Automated Budget Compilation System
ABDR	Aircraft Battle Damage Repair
ACC	Air Combat Command
ACIM	Availability Centered Inventory Model
ACSC	Air Command Staff College
AETC	Air Education and Training Command
AFAA	Air Force Audit Agency
AFIT	Air Force Institute of Technology
AFLMA	Air Force Logistics Management Agency
AFMC	Air Force Materiel Command
AFSAC	Air Force Security Assistance Center
AFSEB	Air Force Stockage Effectiveness Board
AFWC	Air Force Wargaming Center
AIS	Automated Induction System
ALAM	Airlift Logistics Assessment Model
ALC	Air Logistics Center
ALT	Administrative Leadtime
AMC	Air Mobility Command
AOB	Annual Operating Budget
API	Applications, Programs, and Indentures
APU	Auxiliary Power Unit
ARROWS	Aviation Retail Reqmts Oriented to Weapon Replaceable Assemblies
ASM	Aircraft Sustainability Model
AWM	Awaiting Maintenance
AWP	Awaiting Parts
BCR	Baseline Change Request
BCS	Bench Check Serviceable
BLSS	Base Level Self-Sufficiency Spares (now IRSP)
C4I	Command, Control, Communication, Computer, and Intelligence
C-Ratings	Combat Ratings
CAIG	Cost Analysis Improvement Group
CAMS	Core Automated Maintenance System
CEMS	Comprehensive Engine Management System
CENTCOM	Central Command
CIM	Corporate Information Management
CLRU	Consumable Line Replaceable Unit
CLS	Central Leveling Summary
CLS	Contractor Logistics Support

CLSS	Combat Logistics Support Squadron
COBRA	Cost of Base Realignment Actions
CONUS	Continental United States
COTS	Commercial-Off-The-Shelf
CPU	Central Processing Unit
CREP	Contract Repair Enhancement Program
CRI	Consolidated Reparable Inventory
CSE	Common Support Equipment
CSI	Consolidated Serviceable Inventory
CSIS	Central Secondary Item Stratification
CSMS	Combat Supplies Management System
CSRD	Comm-Computer Systems Requirement Document
CVP	Conformance Verification Program
D028	Central Leveling System
D035	Stock Control System
D035A	Item Manager Wholesale Requisition Process
D035C	Recoverable Assembly Management Process
D035E	Readiness Bases Leveling System
D035K	Wholesale and Retail Receiving and Shipping Process
D041	Recoverable Item Requirements System
D042	Comprehensive Engine Management System
D087C	Sustainability Assessment Module
D087J/K	AFMC DRIVE Production System
D104	Worldwide Stock Balance & Consumption System
DDM	DRIVE Distribution Module
DDR	Daily Demand Rate
DFIO	DRIVE Functional Integration Office
DLA	Defense Logistics Agency
DLSIE	Defense Logistics System Information Exchange
DMAS	Dyna-METRIC Microcomputer Analysis System
DMBA	Depot Maintenance Business Area
DMIF	Depot Maintenance Industrial Fund
DMMIS	Depot Maintenance Management Information System
DMRD	Defense Management Review Decision
DMSC	Depot Maintenance Support Center
DoD	Department of Defense
DR	Deficiency Report
DRC	Dynamics Research Corporation
DRCQ	Depot Repair Cycle Quantity
DREP	Depot Repair Enhancement Program
DRIVE	Distribution & Repair in Variable Environments
DSO	Direct Support Objective
DSOR	Dual Sources of Repair
DTDRIVE	DeskTop DRIVE
Dyna-METRIC	Dynamic Multi-Echelon Technique for Recoverable Item Control

EA	Executive Agent
EEIC	Element of Expense Investment Code
EIS	Executive Information System
EMS	Enhanced Multi-Echelon System
ENMCS	Engine Not Mission Capable - Supply
EOQ	Economic Order Quantity
EOQ/VSL	Economic Order Quantity/Variable Safety Level
EPP	EXPRESS Priority Preprocessor
ERO	Engine Review Organization
EXPRESS	Execution and Prioritization of Repair Support System
FAMMAS	Funding/Availability Multi-Method Allocator for Spares
FD	Functional Description
FMS	Foreign Military Sales
FOC	Full Operating Capability
GAO	General Accounting Office
GOSG	General Officer Steering Group
GPSS	General Purpose Simulation System
GTACS	Ground Theater Air Control System
GWAM	Get Well Assessment Module
HOWMAL	How Malfunction
ICS	Interim Contractor Support
IM	Item Manager
IMDE	Integrated Model Development Environment
IMP	Inventory Management Program
IOC	Initial Operating Capability
IPD	Integrated Product Development
IPT	Integrated Process Team
IRD	Initial Requirements Determination
IREP	Intermediate Repair Enhancement Program
IRP	Inventory Reduction Plan
IRSP	In-place Readiness Spares Package (formerly BLSS)
IWIPS	International Weapon Item Projection System
IWSM	Integrated Weapon System Management
JEIM	Jet Engine Intermediate Maintenance
JEMS	Jet Engine Management Simulator
JLSC	Joint Logistics Systems Center
JR	Job-Routed
LAMs	Logistics Assessment Models
LANTIRN	Low Altitude Navigation Targeting InfraRed For Night
LCOM	Logistics Composite Model
LEAD	Logistics Enhanced Awareness Development
LL	Lean Logistics
LMI	Logistics Management Institute
LMS	Logistics Management System
LRU	Line Replaceable Unit

M&S	Models & Simulations
MAJCOM	Major Command
MC	Mission Capability
MDS	Mission Design Series
METRIC	Multi-Echelon Technique for Recoverable Item Control
METRICs	Measures of Performance
MIC	Maintenance Inventory Center
MICAP	Mission In-Capable
MM	Materiel Manager
MOD-METRIC	Modified Multi-Echelon Technique for Recoverable Item Control
MRC	Major Regional Conflict
MRP	Material Requirements Planning
MRSP	Mobility Readiness Spares Package
MSOR	Multiple Sources of Repair
MTBD	Mean Time Between Demands
MTBF	Mean Time Between Failure
NIIN	National Item Identification Number
NRTS	Not Reparable This Station
NSN	National Stock Number
O&M	Operations & Maintenance
O&ST	Order and Ship Time
OA	Obligation Authority
OCM	On-Condition Maintenance
OIM	Organizational Intermediate Maintenance
OMENS	Opportunistic Maintenance Engine Simulator
OPR	Office of Primary Responsibility
OR	Operations Research
ORA	Operations Research Analyst
ORA	Operational Readiness Assessment
ORG	Operations Research Group
OSD	Office of the Secretary of Defense
OWLP	Overseas Workload Program
PA	Program Authority
PAA	Primary Aircraft Authorized
PACAF	Pacific Air Forces
PARS	Prioritization of Assets in Repair
PC	Personal Computer
PLT	Production Leadtime
PMC	Propulsion Managers Conference
PMO	Program Management Office
POM	Program Objective Memorandum
PPBS	Planning, Programming and Budgeting System
PRS	Propulsion Requirements System
PSE	Plan for Sustaining Engineering
QEC	Quick Engine Change

QPA	Quantity per Application
RADM	Resource Allocation Decision Model
RBIRD	Readiness Based Initial Requirements Determination
RBL	Readiness Based Leveling
RBS	Readiness Based Sparing
RDB	Requirements Data Bank
REALL	Reallocation Module
REALM	Requirements/Execution Availability Logistics Module
REMIS	Reliability & Maintainability Information System
RIPIT	Requirements Interface Process Improvement Team
RIT	Reparable in Transit
ROME	Reliability Operations Maintenance Engineering
RRT	Required Resupply Time
RSD	Reparable Stock Division
RSP	Readiness Spares Package (formerly WRSK)
RTF	Readiness Task Force
SAM	Sustainability Assessment Module
SAMIS	Security Assistance Management Information System
SB&CR	Stock Balance and Consumption Report
SBSS	Standard Base Supply System
SC&D	Stock Control and Distribution
SCP	Support Center Pacific
SCS	Stock Control System
SDF	Statistical Demand Forecasting
SECDEF	Secretary of Defense
SEMR	Sustainment Executive Management Report
SESAME	Selected Essential Item Stockage for Availability Method
SFDLR	Stock Funding of Depot Level Reparables
SMBA	Supply Management Business Area
SMG	Supply Management Group
SMMC	Simultaneous Multi-Echelon, Multi-Indenture Computation
SOF	Special Operations Forces
SOR	Source of Repair
SORCE	Simulation of Removals of Components & Engines
SOS	Source of Supply
SOW	Statement of Work
SPD	System Program Director
SPO	System Program Office
SRAN	Stock Record Account Number
SRU	Shop Replaceable Unit
SSC	Supply Service Center
SSD	System Support Division
STOM	Supply to Maintenance
SWAP	Spares Wartime Assessment Procedure
TASC	The Analytical Sciences Corporation

TAI	Total Aircraft Inventory
TBD	To Be Determined
TLAM	Tactical Logistics Assessment Model
TLM	Two Level Maintenance
TNMCS	Total Not Mission Capable - Supply
TOC	Theory of Constraints
TQM	Total Quality Management
TRADES	Theater Repair & Distribution Execution System
UCT	Unit Cost Target
UMMIPS	Uniform Materiel Movement & Issue Priority System
VSL	Variable Safety Level
WINLAM	Windows Integrated Logistics Assessment Model
WFA	Working Fund Account
WFM	War Fighting Metric
WRM	War Readiness Materiel
WRSK	War Readiness Spares Kit (now RSP)
WSAM	Weapon System Availability Model
WSMIS	Weapon System Management Information System
WSPAR	Weapon System Program Assessment Review

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PA	1				
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PKL	1	CC	1		
SC	1	LGM	1		
XP	3	LGS	1		
SAO/XPS	50	LGT	1		
		LGX	1		
MSG		LGY	1		
CC	1	XP	1		
EN	1				
SXW	1	AFSAA/SA	1		
		ACC/LG	1		
		AMC/LG	1		
		AETC/LG	1		
		DLA/LO	1		
		PACAF/LG	1		
		USAFE/LG	1		